Algebra II Unit 9 Formulas

Sequence Formulas

Arithmetic Sequence:

a_1 = the first term d = the common difference

explicit formula : $a_n = a_1 + (n - 1)d$

recursive formula : $a_{n+1} = a_n + d$

Geometric Sequence:

a_1 = the first term r = the common ratio

explicit formula : $a_n = a_1 r^{n-1}$

recursive formula : $a_{n+1} = r\, a_n$

Series Formulas

Arithmetic Series:

$$S_n = \frac{n}{2}(a_1 + a_n)$$

a_1 = the first term

n = the number of terms

a_n = the last term

Geometric Series:

$$S_n = \frac{a_1(1 - r^n)}{1 - r} \quad \text{or} \quad S_n = \frac{a_1 - a_n r}{1 - r}$$

a_1 = the first term

r = the common ratio

n = the number of terms

a_n = the last term

Infinite Geometric Series:

$$\text{If } -1 < r < 1 \text{ , then } S = \frac{a_1}{1 - r} \ .$$